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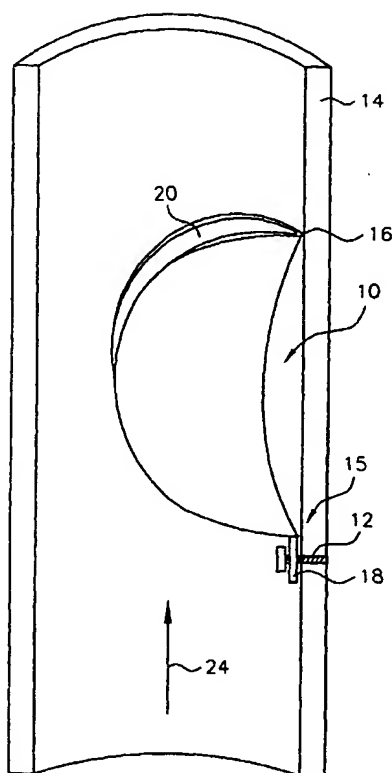
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- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.
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[Continued on next page]

(54) Title: **IMPLANTABLE VALVE SYSTEM**



(57) Abstract: An implantable valve having a valve element or leaflet and a base that is attachable to a vessel wall using a connector such as a screw, pin or a staple. The valve can be implanted using a catheter to position the valve in a desired location and drive the connector into the vessel wall. The valve can be used as a venous valve to control blood flow within the veins, arteries, heart or the aorta of a patient.

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## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/50994

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61F2/24

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EP0-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2 728 457 A (FRANCESCHI CLAUDE) 28 June 1996 (1996-06-28) page 2, line 11 -page 3, line 29 page 4, line 26 - line 30 figures 1,2	1,3,4,25
A	---	2,5-13, 26-50
P,X	WO 01 17462 A (MEDICAL CARBON RES INST LLC) 15 March 2001 (2001-03-15) figures 8-15 page 12, line 15 -page 15, line 29	1,25
A	---	2-13, 26-50
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☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

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## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/50994

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	US 6 299 637 B1 (SHAOLIAN SAMUEL M ET AL) 9 October 2001 (2001-10-09)  figure ALL column 4, line 34 -column 5, line 9 column 6, line 13 -column 10, line 28	38,39, 42,43, 45-47
A		1-13, 25-37
P,X	--- WO 01 56500 A (COOK INC) 9 August 2001 (2001-08-09) figures 12-14 page 12, line 28 -page 13, line 24 page 15, line 9 -page 32, line 15	1-3,6, 10,11
A		12,13, 25-50
A	--- WO 98 46115 A (TRANSVASCULAR INC) 22 October 1998 (1998-10-22) figures 2,9A page 33, line 3 - line 27 page 46, line 27 - line 34	1,25,38
A	--- US 5 500 014 A (QUIJANO R C ET AL) 19 March 1996 (1996-03-19) the whole document	1,25,38
P,A	--- WO 00 67679 A (VENPRO CORP) 16 November 2000 (2000-11-16) figure 1A abstract  -----	1,25,38

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 01/50994

## Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 21-24, 55-60  
because they relate to subject matter not required to be searched by this Authority, namely:  
Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
1-13, 25-50

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-13,25-50

A body lumen valve comprising a base, a valve element connected to the base and a connector that attaches the base to a lumen surface region.

1.1. Claims: 1-13

A body lumen valve comprising a base, a valve element connected to the base and a connector that attaches the base to a lumen surface region.

1.2. Claims: 25-37

A valve comprising a base, a connector that attaches the base to a lumen surface region and a tubular wall attached to the base, the tubular wall having a distal end with a distal opening and a proximal end with a proximal opening such that fluid flow from the distal end to the proximal end forces the tubular wall into an open position and fluid flow from the proximal end forces the tubular wall into a closed position.

1.3. Claims: 38-50

An implantable venous valve comprising a base, a connector that attaches the base to a lumen surface region, a leaflet; and a hinge connecting the base to the leaflet such that the leaflet moves relative to the base between an open position and a closed position.

2. Claims: 14-20

A valve and a delivery catheter kit comprising a valve having a base, a valve element connected to the base and a connector that attaches the base to a vessel wall; and a delivery catheter having a driver and a guide such that the driver attaches the connector to the vessel wall.

3. Claims: 51-54

A delivery catheter for an intraluminal valve comprising a sheath; a catheter mounted within the sheath, the catheter having a valve to be delivered within a body lumen; and a cannula attached to the catheter, the cannula having an aperture that delivers a fluid to a site.

Please note that all inventions mentioned under item 1, although not

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

necessarily linked by a common inventive concept, could be searched without effort justifying an additional fee.

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/50994

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
FR 2728457	A	28-06-1996	FR 2728457 A1	28-06-1996
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